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Chapter 21 - CONSTRUCTION STANDARDS

CADD Production Criteria Handbook

21.1 GENERAL

The use and generation of CADD files by Construction will be in accordance with the general standards applied to all disciplines.

21.2 STANDARD FILE NAMES

Florida Department of Transportation (FDOT) utilizes standard naming conventions for all of its files. Some of the automation implemented in various tools provided by FDOT depends on naming conventions being met. More importantly, the naming convention confers information to the downstream customer of the data.

Standard file names should follow this format: **AAAABB##.ext**

Where **AAAA** = *abbreviated file description*, **BB** = *Discipline Denotation*, **##** = *Sequence number*.

Note Please see CADD Production Criteria Handbook (CPCH) Chapter 4 for more information.

The following table defines the Construction File Name Standards in regards to FDOT Projects with the understanding the each file name will include sequence numbering. The standard file names defined by the design disciplines will be applied except the portion defining the discipline will be "CN" instead of "RD".

Example: DSGNRD01.DGN will be DSGNCN01.DGN for Construction's use.

File Type	File Name	Model Name	File Description	Rule File	Seed File	Critical File
Cross Sections	PDXSCN.dgn	rdxsrd	Pond Cross Sections	pdxsrd.rul	\$(MX_SEEDIR)fdotseedxs.dgn	X
Cross Sections	RDXSCN.dgn	rdxsrd	Roadway Cross Sections	rdxsrd.rul	\$(MX_SEEDIR)fdotseedxs.dgn	X
Drainage	DREXCN.dgn	default	Drainage Structures – Existing	drexrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Drainage	DRPRCN.dgn	default	Drainage Structures – Proposed	drprrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Drainage	DRXSCN.dgn	rdxsrd	Drainage Structure Cross Sections	drxsrd.rul	\$(MX_SEEDIR)fdotseedxs.dgn	X
Existing Topography	TOPOCN.dgn	default	Topography - Existing	topord.rul	\$(MX_SEEDIR)fdotseed2d.dgn	
Proposed Design	DSGNCN.dgn	default	Proposed Design	dsgnrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Proposed Design	DSPFCN.dgn	default	Proposed Profile	plprd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Proposed Design	TEXTCN.dgn	default	Text Labels and Misc. Descriptions	planrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Traffic Control	TCDSCN.dgn	default	Traffic Control Design	tcdsrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Utilities	UTEXCN.dgn	default	Utilities - Existing	utexrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X
Utilities	UTPRCN.dgn	default	Utilities - Proposed	utprrd.rul	\$(MX_SEEDIR)fdotseed2d.dgn	X

21.3 RESOURCE FILES

Construction will use the resource files bundled with the Project.

21.4 ENGINEERING DATA

Engineering Data to be delivered with each project should be located in the ... \eng_data directory and include:

- ASCII files containing alignment, profile and cross section information
- Q/C reports
- PostScript files of each sheet in the plan set

21.5 PROFESSIONALS' ELECTRONIC DATA DELIVERY SYSTEM (PEDDS)

PEDDS shall be used to Secure and Authenticate project data. When projects are received, the FDOT authenticates the data on the delivered CD. Each time data is transmitted to or received by FDOT the data shall be secured and authenticated. PEDDS shall also be used to authenticate any project specific data received as part of a delivery from an outside source or discipline. For example, an electronic delivery to Roadway from Survey or EMO should be secured and authenticated. Roadway shall electronically secure all files for delivery.

21.6 SYMBOLOGY STANDARDS

FDOT Standard Level Libraries define the FDOT CADD Symbology Standards for each Discipline with the associated ByLevel Color, ByLevel Line Style, and ByLevel Line Weight symbology. Designers are to use these standards to assign each element within FDOT CADD design files. These levels and symbology are grouped and translated into FDOT Standards Rule Files utilized for Quality Control to check compliancy of each FDOT standard design file to the FDOT CADD Standards.

The Standard File Names for the Construction discipline with associated Rule Files are found in Section 21.2 of this chapter.

The symbology defined for respective disciplines shall be used for all revisions/changes made by Construction to the component plan sets. The only defined symbology specific to Construction is for revisions.

Note Refer to Chapter 3 (Resource and Support Files) of this document for more details and complete listing of Rule Files with associated Levels/Symbology information.

21.7 PROJECT PACKAGE – ELECTRONIC SUBMITTAL

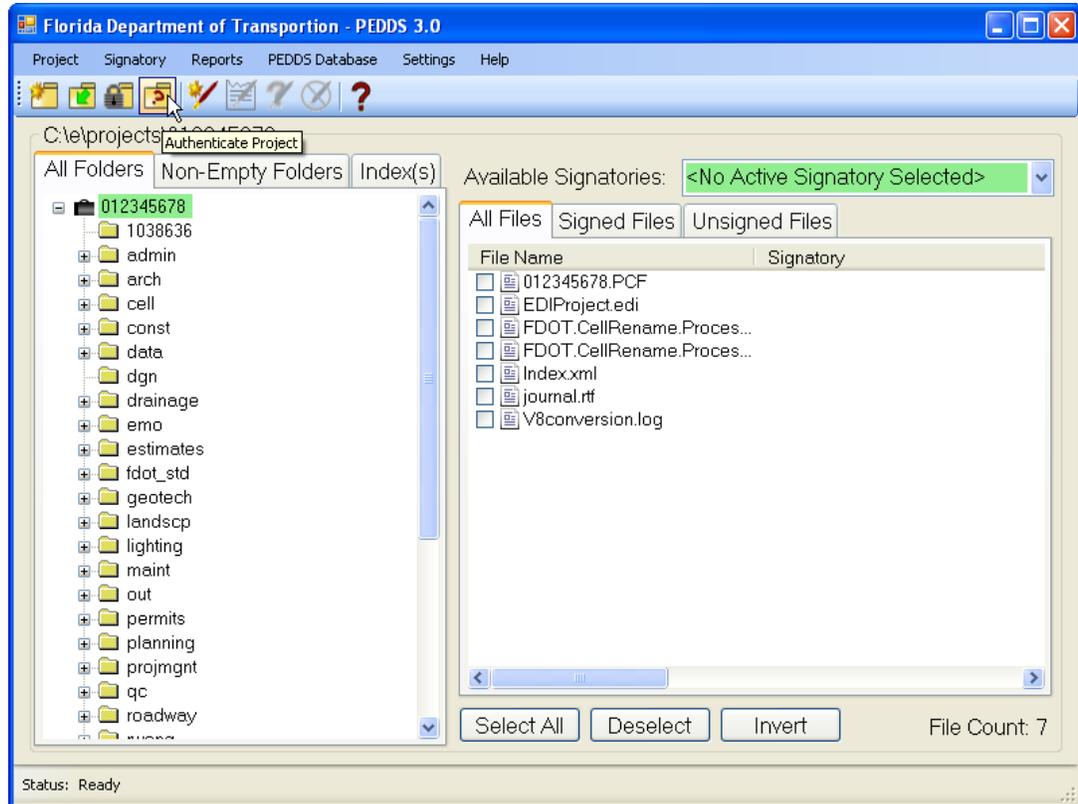
21.7.1 RECEIVING DATA

Each project should have a computation book and an electronic delivery CD. The CD should include all project files in a directory tree as described in chapter 4. The delivery CD is the “official” CD and should be kept in a safe place during the life of the project. The steps for using the data in Construction are defined below.

When the office responsible for the Construction project receives the CD, the contents must be verified as the official data by using the authentication feature of PEDDS.

21.7.2 CONSTRUCTION'S USE OF ELECTRONIC DATA:

1. Open the project in PEDDS, click the **Authenticate Project** icon () and print the **"Delivery Authentication Test"** to begin the authentication process.



In a block titled **"Delivery Manifest File Authentication"** the following sentence should be found:

"All Project files have been successfully authenticated by comparing the file's SHA-1 hash code stored in this Manifest.XML file against a freshly computed SHA-1 hash code of the Project file itself to verify that no changes have occurred."

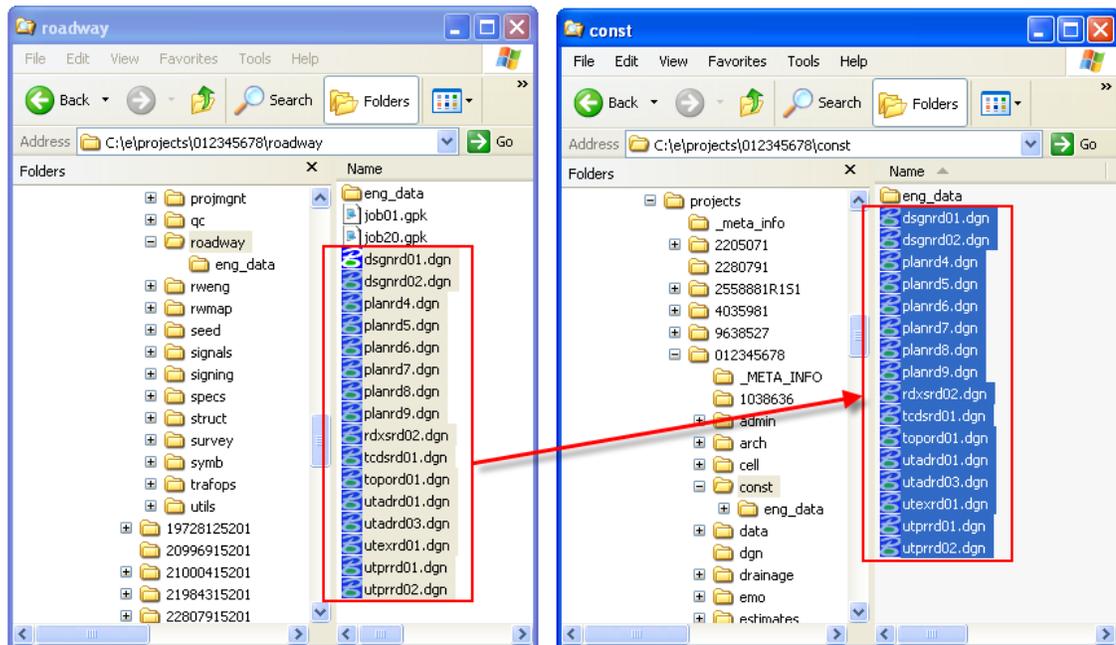
If this is found, then no changes have been made to the project files since it was last secured. If the project fails this test, then it has been altered since it was last secured and delivered. Obtain an original set before continuing.

With a valid project in hand, continue to authenticate the project by comparing the signatory documents with the "SIGNATURE BLOCK" found on the "Delivery Authentication Test" document. If they all match, sign and date the signature block on the authentication test. Having done this, you have successfully authenticated the project.

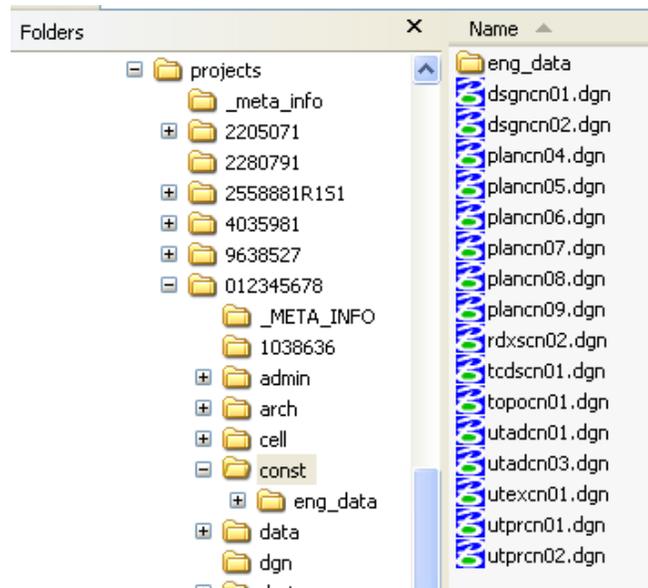
2. Copy the files from the delivery CD onto your server or workstation.

Note The files may be made accessible through TIMS since the workflow may differ in different districts. **If the electronic files are used for as-built plans, the following guidelines are recommended.**

3. Copy the design files from the *roadway* directory into the *const* directory.

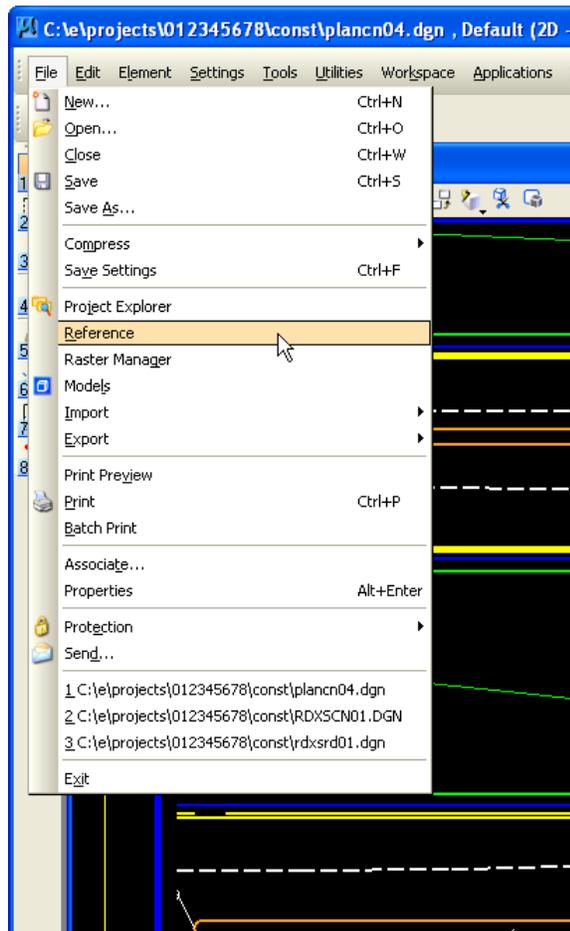


4. After the files have been copied to the *const* directory, rename the files by replacing the roadway denotation, “rd” in the file name to the construction denotation, “cn”.
(Example: *dsgnrd01.dgn* becomes *dsgncn01.dgn*, *plpprd04.dgn* becomes *plppcn04.dgn* etc.)

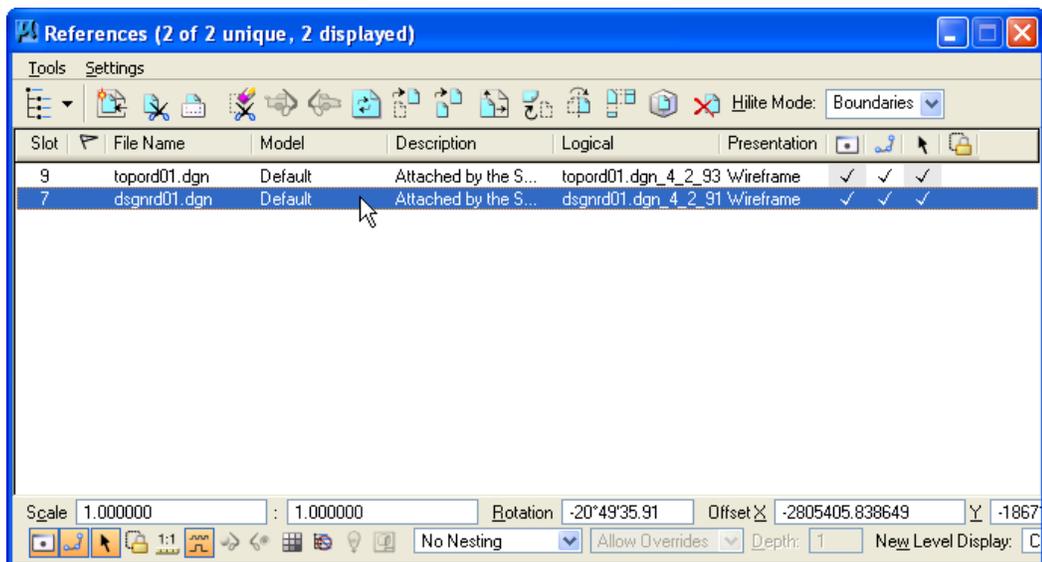


5. Open the MicroStation design file containing the plan sheets (*plancn01.dgn*) and add the *dsgncn01.dgn* to the list of reference files in order for the “as-built” plans to show up properly.

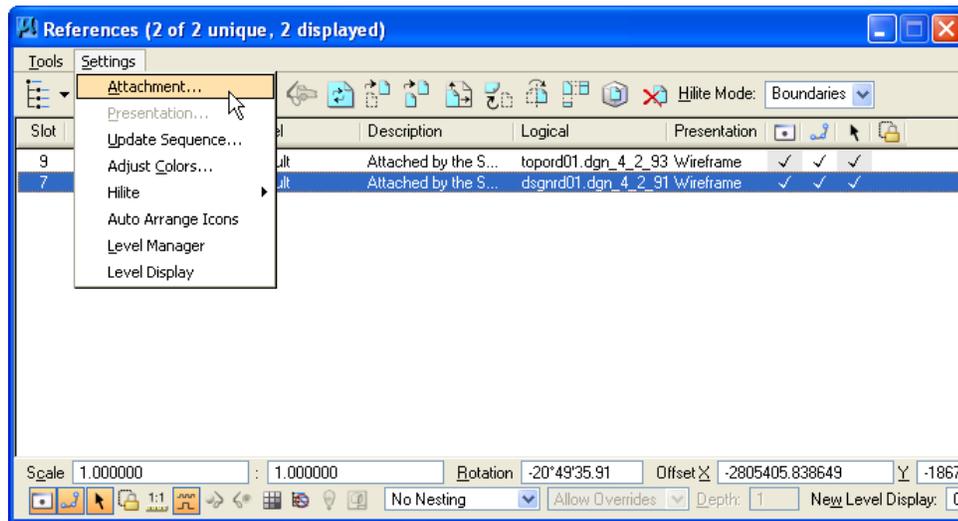
6. Select **File > Reference**.



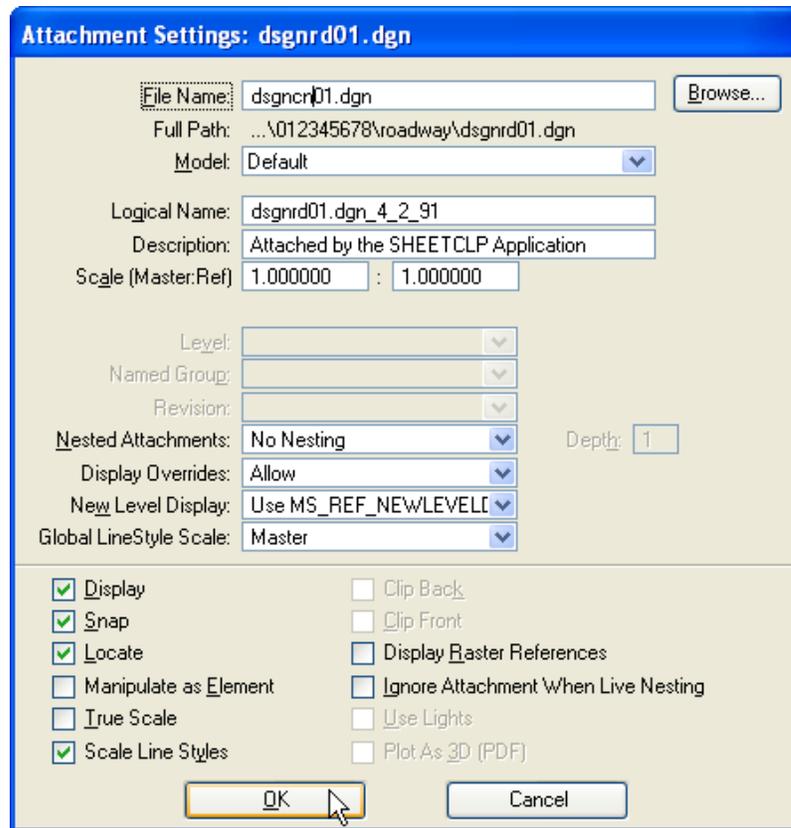
7. Select the “as-designed” master file (typically named *dsgnrd01.dgn*).



8. The file name will need to be changed. Select **Settings > Attachment**.



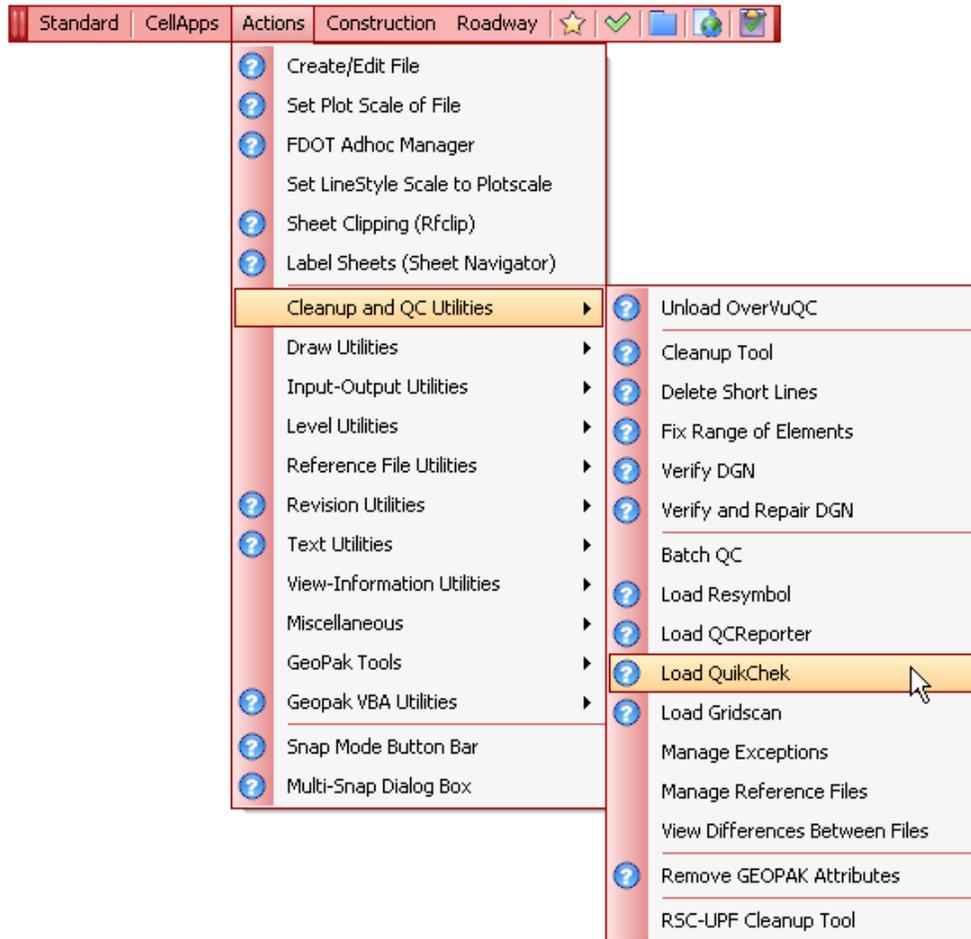
9. Change the name to the new construction “as-built” design file and click **OK**.



Note As changes are made in the “as-built” design file they will show up correctly in the Plan/Profile sheet.

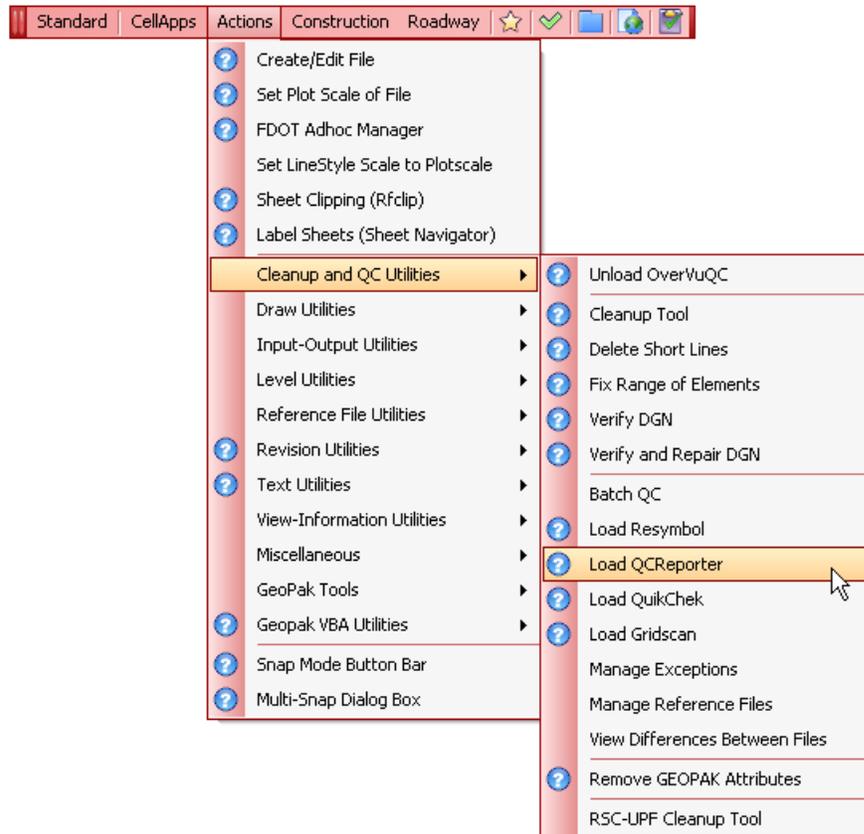
21.8 QUALITY CONTROL

Quality control for Construction should be done using the year of CADD standards that the project was developed under for per the QC reports. Every year that the standards are updated in the FDOT software delivery, the rule files are maintained in a directory with the year as the directory name. Example 1998 CADD standards are in ...\\fdot2008\qc_rules\std_98. The FDOT Menu Actions option contains Cleanup and QC Utilities. The Load QuikChek option loads a tool to ensure field changes are drawn according to the project year standards. Access this tool by selecting **Actions > Cleanup and QC Utilities > Load QuikChek**.



Note The figure shown above reflects the FDOT2008 CADD Software Actions Menu. When choosing QC-Std for standards from a previous year, the user may be prompted to click on the year of the standards so that an ASCII file will be placed in the project directory called standards.ini. This file contains a line of text that tells FDOT software what standards to use for the life of the project.

A QC Report must be generated by the QC software provided by FDOT. Access this tool by selecting **Actions > Cleanup and QC Utilities > Load QC Reporter**. Help for this utility can be accessed by selecting the help icon () to the left of the Load QC Reporter Option.



The following is an example of the required QC Report.

```
GDM Software QC Summary Status Report    Date: 2008:12:24:11:15

Design file name
C:\e\projects\012345678\const\dsgnncn01.dgn, Default
  Process      Date          Compliance  Checks  Added since  Rule file  User
  quikchek     2007:04:16:15:51  50.00%    N/A     0.00%    dsgnrd.rul  knasdmr
  Global origin:  x: 0.00    y: 0.00    z: 0.00    OK
  working units: Survey Fe/HU    Resolution: 1000    Status: OK
  2D/3D:        OK

C:\e\projects\012345678\const\dsgnncn02.dgn, Default
  quikchek     2007:04:16:15:51  100.00%   N/A     0.00%    dsgnrd.rul  knasdmr
  Global origin:  x: 0.00    y: 0.00    z: 0.00    OK
  working units: Survey Fe/HU    Resolution: 1000    Status: OK
  2D/3D:        OK

C:\e\projects\012345678\const\plancn04.dgn, Default
  quikchek     2008:12:24:11:03  100.00%   N/A     0.00%    planrd.rul  rd964lm
  Global origin:  x: 0.00    y: 0.00    z: 0.00    OK
  working units: Survey Fe/HU    Resolution: 1000    Status: OK
  2D/3D:        OK

C:\e\projects\012345678\const\plancn05.dgn, Default
  quikchek     2007:04:16:17:00  100.00%   N/A     0.00%    planrd.rul  knasdmr
  Global origin:  x: 0.00    y: 0.00    z: 0.00    OK
  working units: Survey Fe/HU    Resolution: 1000    Status: OK
  2D/3D:        OK
```